

WHAT IS CLAIMED IS:

1. A resid fuel, the resid fuel comprising a base fuel and an additive for reducing a pollutant emission, the additive comprising:

a plant oil extract;  
an antioxidant; and  
a thermal stabilizer.

2. The resid fuel of claim 1, wherein the plant oil extract comprises an oil extract of a plant of the *Leguminosae* family.

3. The resid fuel of claim 1, wherein the plant oil extract is selected from the group consisting of oil extract of vetch and oil extract of barley.

4. The resid fuel of claim 1, wherein the plant oil extract comprises chlorophyll.

5. The resid fuel of claim 1, wherein the antioxidant comprises  $\beta$ -carotene.

6. The resid fuel of claim 1, wherein the thermal stabilizer comprises jojoba oil.

7. The resid fuel of claim 1, wherein the thermal stabilizer comprises an ester of a C20-C22 straight chain monounsaturated carboxylic acid.

8. The resid fuel of claim 1, wherein the plant oil extract comprises oil extract of vetch, wherein the antioxidant comprises  $\beta$ -carotene, and wherein the thermal stabilizer comprises jojoba oil.

9. The resid fuel of claim 1, further comprising a diluent.

10. The resid fuel of claim 9, wherein the diluent is selected from the group consisting of toluene, gasoline, resid fuel, jet fuel, and mixtures thereof.

11. The resid fuel of claim 1, further comprising an oxygenate.

12. The resid fuel of claim 11, wherein the oxygenate is selected from the group consisting of methanol, ethanol, methyl tertiary butyl ether, ethyl tertiary butyl ether, and tertiary amyl methyl ether, and mixtures thereof.

13. The resid fuel of claim 1, further comprising at least one additional additive selected from the group consisting of cetane improvers, detergents, corrosion inhibitors, metal deactivators, ignition accelerators, dispersants, anti-knock additives, anti-run-on additives, anti-pre-ignition additives, anti-misfire additives, antiwear

additives, antioxidants, demulsifiers, carrier fluids, solvents, fuel economy additives, emission reduction additives, lubricity improvers, and mixtures thereof.

14. The resid fuel of claim 8, wherein a ratio of grams of plant oil extract of vetch to grams of  $\beta$ -carotene in the fuel is from about 0.25:1 to about 2:1, wherein a ratio of grams of oil extract of vetch to milliliters jojoba oil in the fuel is from about 0.5:1 to about 2:1, and wherein a ratio of milliliters jojoba oil to grams of  $\beta$ -carotene in the fuel is from about 0.5:1 to 2:1.

15. The resid fuel of claim 8, wherein a ratio of grams of plant oil extract of vetch to grams of  $\beta$ -carotene in the fuel is from about 0.3:1 to about 0.9:1, wherein a ratio of grams of oil extract of vetch to milliliters jojoba oil in the fuel is from about 0.3:1 to about 0.9:1, and wherein a ratio of milliliters jojoba oil to grams of  $\beta$ -carotene in the fuel is about 0.5:1 to about 1.5:1.

16. The resid fuel of claim 8, wherein a ratio of grams of plant oil extract of vetch to grams of  $\beta$ -carotene in the fuel is about 0.6:1, wherein a ratio of grams of oil extract of vetch to milliliters jojoba oil in the fuel is about 0.6:1, and wherein a ratio of milliliters jojoba oil to grams of  $\beta$ -carotene in the fuel is about 1:1.

17. The resid fuel of claim 8, comprising from about 0.0048 ml to about 0.034 ml jojoba oil per 3785 ml of resid fuel, from about 0.0048 g to about 0.034 g of  $\beta$ -carotene per 3785 ml of resid fuel, and from about 0.0029 g to about 0.020 g oil extract of vetch per 3785 ml of resid fuel.

18. The resid fuel of claim 8, comprising from about 0.0017 ml to about 0.034 ml jojoba oil per 3785 ml of resid fuel, from about 0.0016 g to about 0.0034 g of  $\beta$ -carotene per 3785 ml of resid fuel, and from about 0.010 g to about 0.020 g oil extract of vetch per 3785 ml of resid fuel.

19. The resid fuel of claim 8, comprising about 0.034 ml jojoba oil per 3785 ml of resid fuel, about 0.034 g of  $\beta$ -carotene per 3785 ml of resid fuel, and about 0.020 g oil extract of vetch per 3785 ml of resid fuel.

20. The resid fuel of claim 8, comprising about 0.017 ml jojoba oil per 3785 ml of resid fuel, about 0.017 g of  $\beta$ -carotene per 3785 ml of resid fuel, and about 0.010 g oil extract of vetch per 3785 ml of resid fuel.

21. The resid fuel of claim 8, comprising from about 0.0048 ml to about 0.034 ml jojoba oil per 3785 ml of resid fuel, from about 0.0048 g to about 0.0034 g of  $\beta$ -carotene per 3785 ml of resid fuel, and from about 0.0029 g to about 0.020 g oil extract of vetch per 3785 ml of resid fuel.

5 22. The resid fuel of claim 8, comprising about 0.034 ml jojoba oil per 3785 ml of resid fuel, about 0.034 g of  $\beta$ -carotene per 3785 ml of resid fuel, and about 0.020 g oil extract of vetch per 3785 ml of resid fuel.

23. The resid fuel of claim 8, comprising about 0.0048 ml jojoba oil per 3785 ml of resid fuel, about 0.0048 g of  $\beta$ -carotene per 3785 ml of resid fuel, and about  
10 0.029 g oil extract of vetch per 3785 ml of resid fuel.

24. The resid fuel of claim 1, wherein the resid fuel comprises a High Residual fuel.

25. The resid fuel of claim 1, wherein the resid fuel comprises a Bunker C fuel.

15 26. A resid fuel, the resid fuel comprising a base fuel and an additive for reducing a pollutant emission, the additive comprising:

an antioxidant; and

a thermal stabilizer.

27. The resid fuel of claim 26, wherein the antioxidant comprises  $\beta$ -carotene.

20 28. The resid fuel of claim 26, wherein the thermal stabilizer comprises jojoba oil.

29. The resid fuel of claim 26, wherein the thermal stabilizer comprises an ester of a C20-C22 straight chain monounsaturated carboxylic acid.

30. The resid fuel of claim 25, further comprising a plant oil extract.

25 31. The resid fuel of claim 30, wherein the plant oil extract comprises an oil extract of a plant of the *Leguminosae* family.

32. The resid fuel of claim 30, wherein the plant oil extract is selected from the group consisting of oil extract of vetch and oil extract of barley.

30 33. The resid fuel of claim 30, wherein the plant oil extract comprises chlorophyll.

34. The resid fuel of claim 26, wherein the antioxidant comprises  $\beta$ -carotene and the thermal stabilizer comprises jojoba oil.

35. The resid fuel of claim 34, wherein a ratio of milliliters jojoba oil to grams of  $\beta$ -carotene in the fuel is from about 0.5:1 to 2:1.

5 36. The resid fuel of claim 34, wherein a ratio of milliliters jojoba oil to grams of  $\beta$ -carotene in the fuel is about 0.5:1 to about 1.5:1.

37. The resid fuel of claim 34, wherein a ratio of milliliters jojoba oil to grams of  $\beta$ -carotene in the fuel is about 1:1.

10 38. The resid fuel of claim 34, comprising from about 0.0017 ml to about 0.034 ml jojoba oil per 3785 ml of resid fuel and from about 0.0016 g to about 0.0034 g of  $\beta$ -carotene per 3785 ml of resid fuel.

39. The resid fuel of claim 34, comprising from about 0.0048 ml to about 0.034 ml jojoba oil per 3785 ml of resid fuel and from about 0.0048 g to about 0.034 g of  $\beta$ -carotene per 3785 ml of resid fuel.

15 40. The resid fuel of claim 34, comprising about 0.017 ml jojoba oil per 3785 ml of resid fuel and about 0.016 g of  $\beta$ -carotene per 3785 ml of resid fuel.

41. The resid fuel of claim 34, comprising about 0.034 ml jojoba oil per 3785 ml of resid fuel and about 0.034 g of  $\beta$ -carotene per 3785 ml of resid fuel.

20 42. The resid fuel of claim 34, comprising about 0.0048 ml jojoba oil per 3785 ml of resid fuel and about 0.0048 g of  $\beta$ -carotene per 3785 ml of resid fuel.

43. A method for producing a resid fuel, the method comprising the steps of:  
preparing an additive by combining  $\beta$ -carotene, jojoba oil, and a diluent,  
the additive comprising about 4 ml jojoba oil and about 4 g  $\beta$ -carotene per 3785  
ml of the additive; and

25 adding the additive to a base fuel to produce a resid fuel, such that the resid fuel contains up to about 4.5 ml of the additive per 3785 ml of resid fuel.

44. A method for producing a resid fuel, the method comprising the steps of:  
preparing an additive by combining  $\beta$ -carotene, jojoba oil, and a diluent,  
the additive comprising about 8 ml jojoba oil, about 4 g  $\beta$ -carotene, and about  
30 19.36 g oil extract of vetch per 3785 ml of the additive; and

adding the additive to a base fuel to produce a resid fuel, such that the resid fuel contains from about 2 ml to about 4 ml of the additive per 3785 ml of resid fuel.

45. A method for producing a resid fuel, the method comprising the steps of:

preparing an additive by combining  $\beta$ -carotene, jojoba oil, and a diluent, the additive comprising about 32 ml jojoba oil and about 32 g  $\beta$ -carotene per 3785 ml of the first additive; and

adding the additive to a base fuel to produce a resid fuel, such that the resid fuel contains from about 0.5 ml to about 4 ml of the additive per 3785 ml of resid fuel.

46. A method for producing a resid fuel, the method comprising the steps of:

preparing an additive by combining  $\beta$ -carotene, jojoba oil, and a diluent, the additive comprising about 32 ml jojoba oil, about 32 g  $\beta$ -carotene, and about 155 g oil extract of vetch per 3785 ml of the additive; and

adding the additive to a base fuel to produce a resid fuel, such that the resid fuel contains from about 0.5 ml to about 4 ml of the additive per 3785 ml of resid fuel.

47. A method for operating a vehicle equipped with a resid fuel-powered engine, the method comprising the step of:

combusting a resid fuel in the engine such that a quantity of a pollutant is produced, wherein the resid fuel comprises a base fuel, a plant oil extract, an antioxidant, and a thermal stabilizer, and wherein the quantity of the pollutant produced by combustion of 3785 ml of the resid fuel is less than a quantity of the pollutant produced by combustion of 3785 ml of the base fuel.

48. A method for operating a vehicle equipped with a resid fuel-powered engine, the method comprising the step of:

combusting a resid fuel in the engine such that a quantity of a pollutant is produced, wherein the resid fuel comprises a base fuel, an antioxidant, and a thermal stabilizer, and wherein the quantity of the pollutant produced by combustion of 3785 ml of the resid fuel is less than a quantity of the pollutant produced by combustion of 3785 ml of the base fuel.